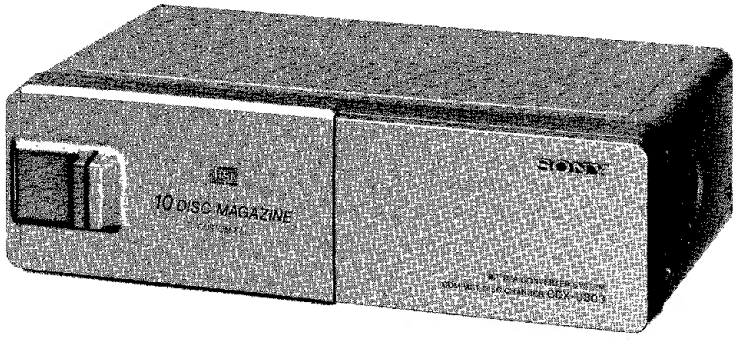
CDX-U303

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model



Model Name Using Similar Mechanism	CDX-U300
CD Mechanism Name	KSM-310AAM

SPECIFICATIONS

System Compact disc digital audio system
Laser diode properties
Material: GaAlAs
Wavelength: 780nm
Emission duration: Continuous
Laser output power: Less than 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.
Frequency response
5 – 20,000 Hz ±1 dB
Wow and flutter Below measurable limit
Signal-to-noise ratio
92 dB
Outputs UNILINK control output (8 PIN)
Analog audio output (RCA PIN)
Current drain 800 mA (CD playback)
800 mA (during loading or ejecting a disc)
Operating temperature
– t0°C to 55°C (14°F to 131°F)
Dimensions Approx. 305 × 90 × 174 mm (12 1/8 × 3 5/8 × 6 7/8 in.) (w/h/d) not incl. projecting parts and controls
Mass Approx. 2.5 kg (5 lb. 8 oz.)
Power requirement
12 V DC car battery (negative ground)
Supplied accessories
Disc magazine (1)
Mounting hardware (1 set)
UNILINK cable (1)
RCA pin cord (1)

Design and specifications subject to change without notice.

COMPACT DISC CHANGER

SONY®

SECTION 5
DIAGRAMS

5-1. IC601 SYSTEM CONTROL MICROCOMPUTER (μPD75116GF-G78-3BE) PORT FUNCTION DESCRIPTION

Pin No.	Port Name	I/O	Port Function
1	APC	O	Laser ON/OFF L: Laser ON
2	CD RESET	O	Reset for Servo System L: Reset
3	CD ON	O	Power ON/OFF for Servo System H: ON
4	–	–	
5	–	–	
6	–	–	
7	RESET	I	Reset for IC601 L: Reset
8	OSC	–	4.19 MHz self-excited oscillation
9	OSC	–	
10	PROM DATA	I/O	E²PROM Data, I/O
11	PROM CLOCK	O	Clock on writing to or reading from E²PROM
12	–	O	
13	ROM INIT	I	Reset by setting L, initialize E²PROM
14	–	–	
15	–	–	
16	–	–	
17	–	–	
18	AUDIO MUTE	O	Mute audio output H: Mute
19	ELEVATOR ON	O	Elevator up/down, Power ON/OFF for sensor H: ON
20	M	O	Motor M601 control
21	M	O	
22	PLG	O	H: Apply power voltage to plunger
23	MC	O	M501, M502 motor control
24	MB	O	
25	MA	O	
26	VSS	–	
27	EJ KEY	I	H: EJECT key is pushed
28	PST	I	H: Magazine is locked
29	EHS	I	Detects height of elevator
30	SCOR	I	SCOR of DSP
31	–	I	
32	A/OUT	I	L: There is AUDIO OUT
33	EE PROM	I	L: There is E²PROM
34	D/OUT	I	H: There is not DIGITAL OUT
35	BUSON	I	L: Communicates with controller
36	–	–	
37	–	–	
38	–	–	

Pin No.	Port name	I/O	Port Function
39	LINK OFF	O	Not used
40	REQ	O	Request serial communication
41	SI	I	Data input of serial communication
42	SO	O	Data output of serial communication
43	SCK	I	Clock for serial communication
44	BACK UP	I	Detects BACK UP H: BACK UP ON
45	EJT	I	EJT sensor input
46	LOT	I	LOT sensor input
47	HOME	I	HOME sensor input L: Location 1
48	TOP	I	TOP sensor input
49	DPT	I	L: During disc is passing
50	DOE	I	L: Disc is upon the pick-up
51	HOT	I	Not used
52	CES	I	L: Disc chucking is completed
53	SUBQ	I	SUBQ of DSP
54	GFS	I	GFS of DSP
55	FOK	I	FOK of DSP
56	SENSE	I	SENSE of DSP
57	VDD	–	
58	–	–	
59	CD CLOCK	O	Control Servo System
60	CD LATCH	O	
61	CD DATA	O	
62	D MUTE	O	Not used
63	SQCK	O	SQCK of DSP
64	EMPH	O	H: During the emphasized disc is playing

5-2. IC501 (BA6247FP) MOTOR DRIVER IC OPERATION

(DRIVER BOARD)

The elevator motor connected between Pin ⑱ and Pin ㉒ of IC501 is as M501, and the disc loading/saving motor connected between Pin ① and Pin ⑱ of IC501 is as M502.

When the IC port logic is Pin ㉒ > Pin ⑱, Pin ① > Pin ⑱, the rotating direction of M501 and M502 becomes normal.

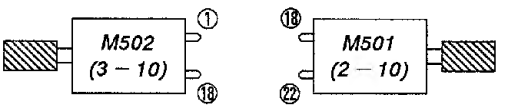
ROTATION TRUTH TABLE

① When MB = MC, both M501 and M502 are stop. (MA value is free.)

② When MB ≠ MC:

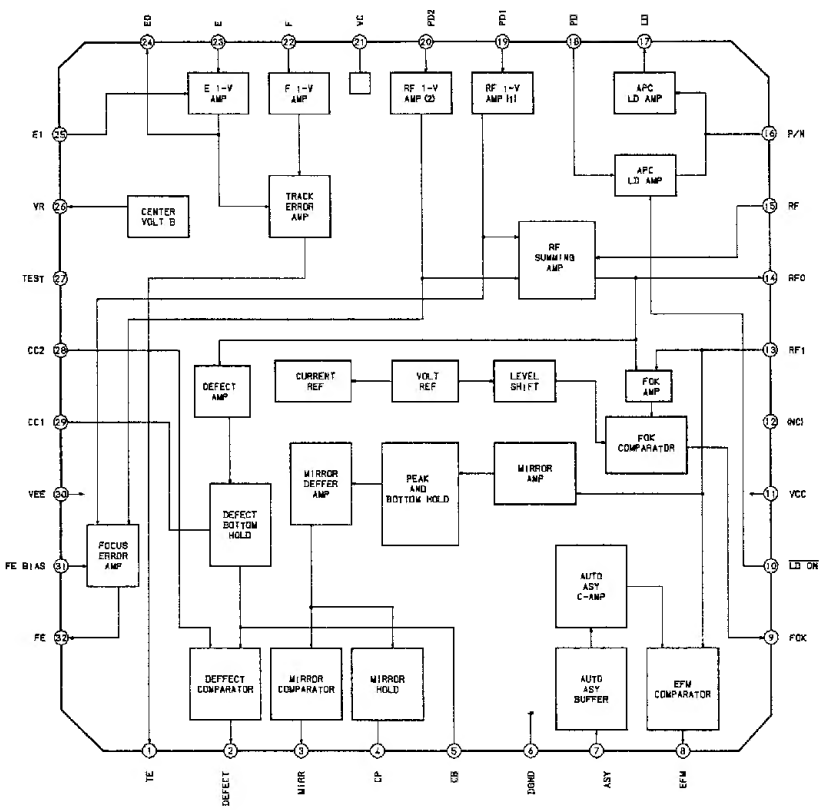
MA Pin ⑧	MB Pin ⑥	MC Pin ⑤	M501	M502	Motor Terminal			Operation
					㉒	①	⑱	
L	L	H	Reverse	Stop	L	OPEN	H	Elevator UP
H	L	H	Normal	Stop	H	OPEN	L	Elevator DOWN
L	H	L	Stop	Reverse	OPEN	L	H	Disc load
H	H	L	Stop	Normal	OPEN	H	L	Disc save

Disc in/out *Elevator up/down*

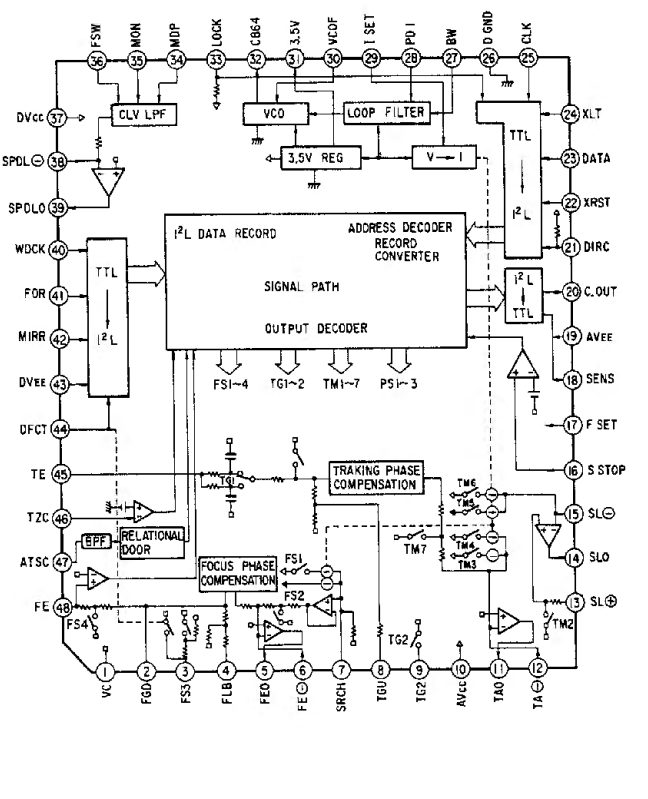


e IC Block Diagrams

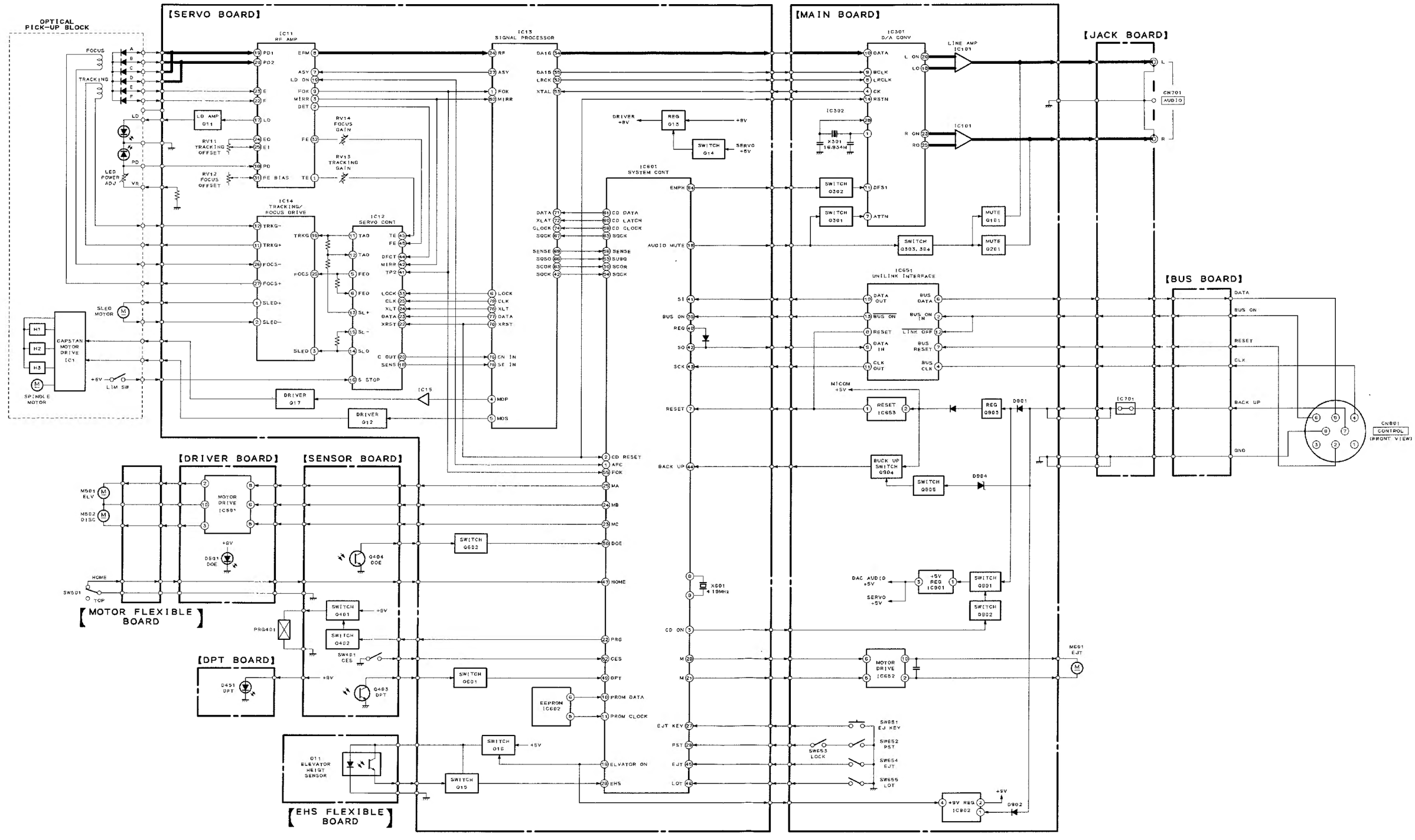
IC11 CXA1081Q



IC12 CXA1182Q-Z



5-3. BLOCK DIAGRAM



5-4. PRINTED WIRING BOARDS

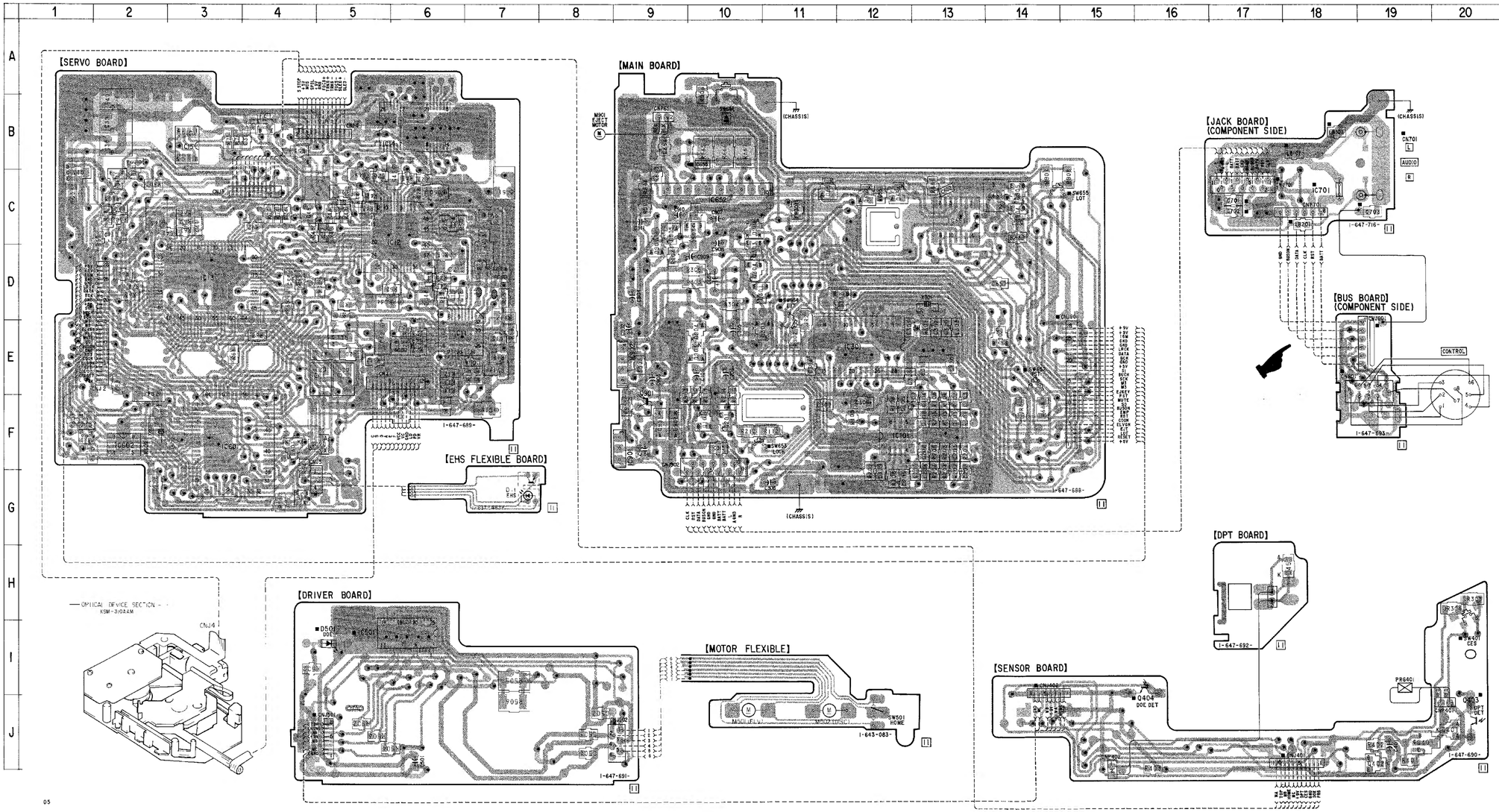
• See page 25 for Semiconductor Lead Layouts.

REVISED

• Semiconductor Location

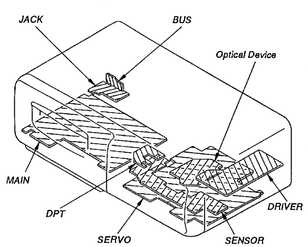
Ref. No.	Location
D11	G-7
D301	E-10
D401	J-20
D451	H-18
D501	I-5
D601	F-4
D602	F-4
D652	C-12
D653	C-11
D654	C-12
D901	F-9
D902	F-9
D903	E-10
D904	E-10
D905	C-9
D906	C-10
D907	D-9
IC11	E-6
IC12	C-6
IC13	D-3
IC14	B-6
IC15	B-3
IC101	F-12
IC301	E-12
IC501	I-6
IC601	F-3
IC602	F-2
IC651	C-13
IC652	C-10
IC653	C-14
IC701	C-18
IC901	F-9
IC902	E-9
Q11	E-5
Q12	B-4
Q13	C-1
Q14	C-2
Q15	G-4
Q16	F-1
Q17	C-4
Q101	F-10
Q201	F-10
Q301	D-10
Q302	D-12
Q303	D-10
Q304	D-10
Q401	J-19
Q402	J-19
Q403	J-20
Q404	I-16
Q601	C-2
Q602	C-2
Q901	F-9
Q902	E-14
Q903	C-10
Q904	D-14
Q905	D-13

Note:
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒ : Pattern on the side which is seen.
- ▒ : Pattern of the rear side.



5-5. SCHEMATIC DIAGRAM • See page 14 and 15 for IC Block Diagrams, page 27 for Waveforms.

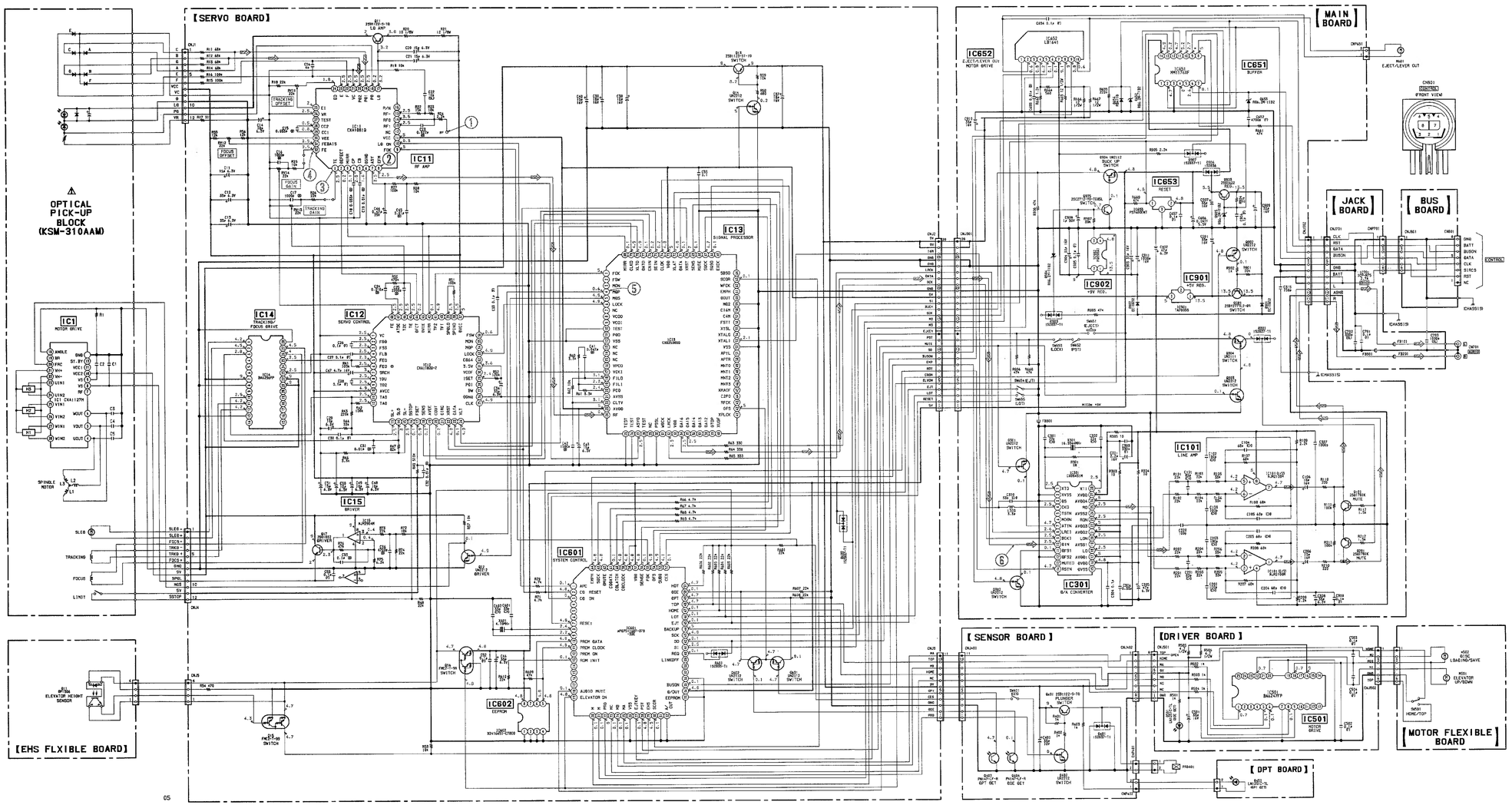
• Circuit Boards Location



Note:
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- : B + Line.
- : panel designation.
- : adjustment for repair.
- Power voltage is fed with the CD changer controller.
- Voltages and waveforms are dc with respect to ground in PLAY mode.
- Voltages are taken with a VOM (10 MΩ/V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. : CD

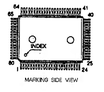


• Semiconductor Lead Layouts

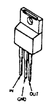
BA6247FP

CXA1081Q

CXD2500BQ



TA7805S



X24164SIC7000

EC10DS2

LN1251C

BA6296FP

CXA1182QZ

MM1176XF

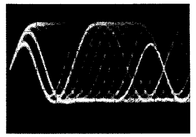
PQ09RA1

2SA1428-Y

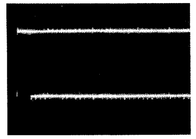
SG220

PN147-LF-R

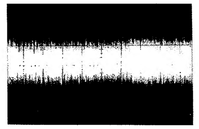
• Waveforms



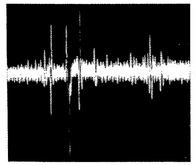
❶ TP RF
0.2 V/div, 0.5 μsec/div



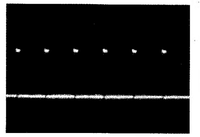
❷ IC11 pin ⑥
1 V/div, 1 μsec/div



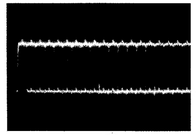
❸ IC11 pin ①
0.2 V/div, 5 msec/div



❹ IC11 pin ⑫
0.1 V/div, 5 msec/div



❺ IC13 pin ④
2 V/div, 2 μsec/div



❻ IC301 pin ⑮
2 V/div, 1 μsec/div

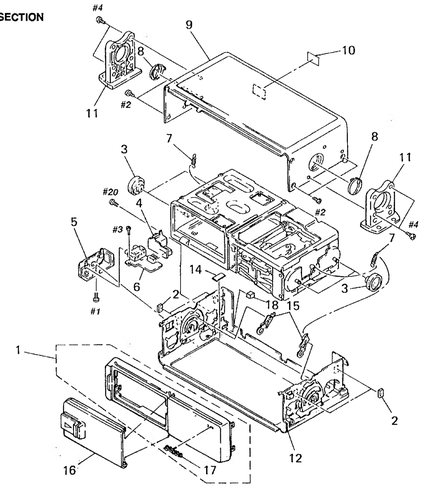
SECTION 6
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

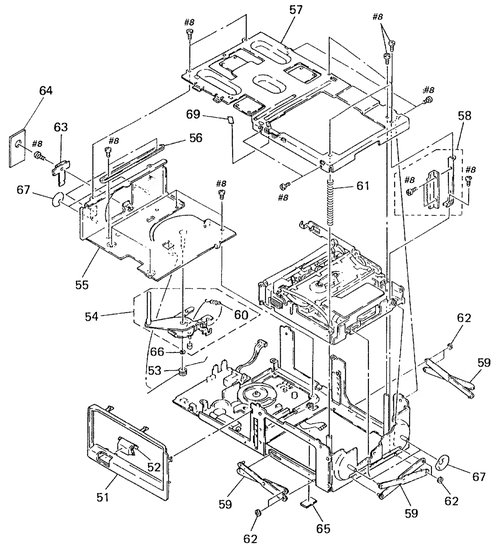
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(1) CASE SECTION



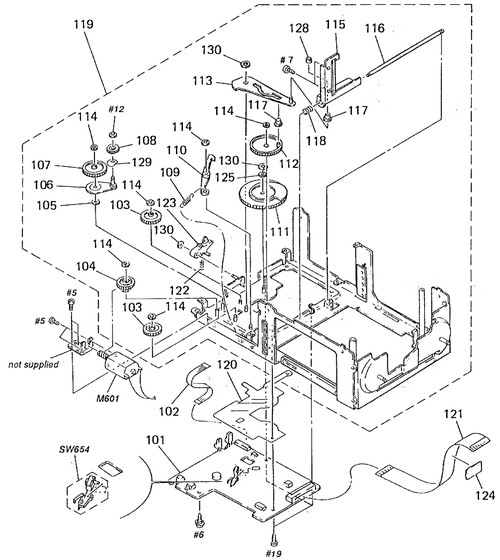
Ref.No.	Part No.	Description	Remark
1	X-3366-572-1	PANEL ASSY, FRONT	
2	3-385-834-01	SPACER (CASE)	
3	3-375-501-01	DAMPER (CNG)	
* 4	1-647-683-11	BUS BOARD	
5	3-375-518-21	COVER (PIN)	
* 6	1-647-716-11	JACK BOARD	
7	3-368-778-01	SPRING (FL), TENSION	
8	3-375-504-21	LEVER (SPRING)	
* 9	3-375-502-61	CASE (UPPER)	
* 10	4-885-838-00	LABEL, CLASS 1 (AEP)	
* 11	3-375-508-11	BRACKET (308)	
* 12	3-375-503-61	CASE (LOWER)	
* 14	3-368-780-01	SHEET (PC BOARD) (G)	
15	X-3364-882-1	ARM (SPRING) ASSY	
16	X-3366-573-1	DOOR ASSY	
17	4-942-568-01	EMBLEM (NW,S), SONY	
18	9-911-843-XX	CUSHION	

(2) MD SECTION 1



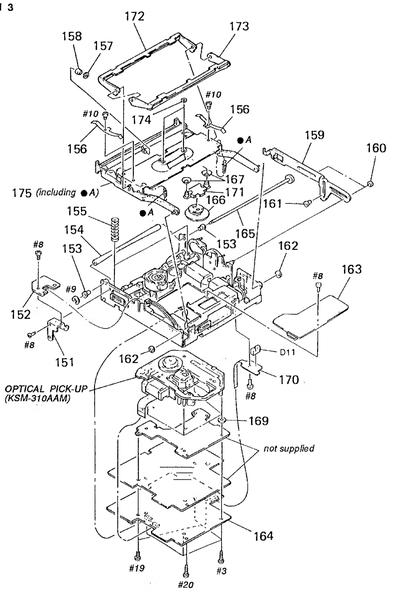
Ref.No.	Part No.	Description	Remark
* 51	3-388-593-01	ESCUTCHEON (Z)	
52	3-388-592-01	BUTTON (EJ2)	
53	3-364-478-01	SPRING (EJ)	
54	X-3362-332-1	LEVER (EJ) ASSY	
* 55	X-3362-334-1	CHASSIS (MZ) ASSY	
* 56	3-364-434-01	GUIDE (MZ)	
* 57	X-3362-347-1	COVER (MD) ASSY	
58	X-3362-488-1	RACK ASSY	
* 59	X-3362-348-1	LEVER (X) ASSY	
60	3-568-814-00	SPRING, TENSION	
61	3-370-364-01	SPRING, COMPRESSION	
62	3-377-719-11	WASHER, POLYETHYLENE	
* 63	3-364-419-03	BRACKET (TR)	
* 64	3-379-098-01	CUSHION (BRACKET)	
65	9-911-844-XX	CUSHION, BATTERY	
66	3-377-720-01	WASHER, POLYETHYLENE	
67	3-385-808-01	SHEET, PROTECTION, DAMPER	
69	3-346-962-01	CUSHION (EJ)	

(3) MD SECTION 2



Ref.No.	Part No.	Description	Remark
* 101	A-3295-444-A	MAIN BOARD, COMPLET	
102	1-648-659-11	CABLE, FLEXIBLE FLAT (11 CORE)	
103	3-364-420-01	GEAR (M)	
104	3-364-413-01	WHEEL (B), WORM	
105	3-701-437-01	WASHER	
106	X-3364-526-2	LEVER (XMZ) ASSY	
107	3-364-417-01	GEAR (L)	
108	3-364-415-01	GEAR (RS)	
109	3-531-866-01	SPRING, TENSION	
110	3-364-433-01	STOPPER (DR)	
111	3-364-411-01	GEAR (EJ), CAM	
112	3-364-432-01	GEAR (DR)	
* 113	X-3364-527-1	LEVER (DR) ASSY	
114	3-377-719-01	WASHER, POLYETHYLENE	
* 115	X-3364-525-1	SLIDER (DR) ASSY	
* 116	3-364-502-01	SHAFT (SDR)	
117	3-364-506-01	ROLLER (SL)	
118	3-568-315-01	SPRING, COMPRESSION	
* 119	X-3364-556-8	CHASSIS SUB ASSY, MD	
* 120	3-368-567-01	SHEET (MD), INSULATING	
121	1-648-658-11	CABLE, FLEXIBLE FLAT (28 CORE)	
122	3-370-385-01	SPRING, COMPRESSION	
* 123	3-364-431-01	LEVER (MZ LOCK)	
124	9-911-844-XX	CUSHION, BATTERY	
125	3-373-013-01	SPRING (EJ CAM)	
128	3-379-490-11	WASHER, POLYETHYLENE	
129	3-364-387-11	SPRING (F)	
130	3-377-720-21	WASHER, POLYETHYLENE	
M601	X-3362-325-1	MOTOR ASSY (EJECT)	
SW654	1-571-754-51	SWITCH, PUSH (1 KEY) (EJECT DET)	

(4) MD SECTION 3



Ref.No.	Part No.	Description	Remark
* 151	3-368-565-01	BRACKET (DPT)	
* 152	1-647-692-11	DPT BOARD	
153	3-364-421-01	BEARING (ROLLER)	
154	3-323-231-11	ROLLER (LOWER)	
155	3-364-508-01	SPRING, COMPRESSION	
156	3-375-290-01	SPRING (DH)	
157	3-341-752-11	WASHER, POLYETHYLENE	
158	3-364-504-01	ROLLER (RA)	
* 159	3-364-380-01	LEVER, SLIDE	
160	3-377-720-11	WASHER, POLYETHYLENE	
161	3-364-506-01	ROLLER (SL)	
162	3-377-719-01	WASHER, POLYETHYLENE	
* 163	A-3295-443-A	DRIVER BOARD, COMPLETE	
* 164	A-3295-440-A	SERVO BOARD, COMPLETE	
165	X-3362-345-1	GEAR ASSY, ROLLER	
166	3-380-759-02	PLATE (C), CHUCK	
167	3-364-387-01	SPRING (F)	
* 169	3-380-121-31	SPACER (W)	
* 170	1-637-483-11	EHS FLEXIBLE BOARD	
171	X-3364-480-2	BRACKET (CP) ASSY	
172	X-3364-482-2	ARM (DH) ASSY	
173	X-3366-968-1	ARM (DH2) ASSY (2)	
174	3-342-940-01	WASHER (M)	
175	X-3366-564-1	ARM (B) SERVICE ASSY	
D11	8-749-924-17	DIODE	